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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/074,939	02/13/2002	Noriyuki Kawaguchi	FUSA 19. 444	8889

26304 7590 08/11/2005

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EXAMINER	
KIM, KEVIN	

ART UNIT	PAPER NUMBER
2638	

DATE MAILED: 08/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/074,939	KAWAGUCHI ET AL.	
	Examiner	Art Unit	
	Kevin Y. Kim	2638	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 May 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,10,12-14,16-23,26,28-30,32 and 33* is/are rejected.

7)☒ Claim(s) *8,9,11,15,24,25,27 and 31* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendment overcame the rejection of claim 33 in the previous Office action. However, a new prior art has been found believed to render claims 1-7,10,12-14,16-23,26,28-30,32 and 33 obvious as set forth below.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1-7,10,12-14,16-23,26,28-30 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over an admitted prior art in view of Meidan et al (US 5,193,102).

Claims 1,5,6,10, and 17,21,22,26.

The admitted prior art, depicted in Fig. 31 and described at pages 5-7, shows a CDMA receiver for applying despread processing (7) to multipath signals, applying synchronous detection processing (8) to the despread signals, combining the detection signals (6b) and discriminating the received data (6c) on the basis of the combined signal. Further, the CDMA receiver further includes a weighing unit (page 6, lines 6-9). But the admitted prior art fails to teach the use of the weighting unit to applying "weighting by multiplying the output signal by a weighting coefficient the value of which is smaller than 1 and varies in conformity with to [sic] the level of said signal component" as recited in claim 1 and "weighting by multiplying the output signal by a weighting coefficient the value of which varies in conformity with the level of said signal component" as recited inc claim 17, when a signal component on a path is below a

set level. In other words, according to the admitted prior art, invalid signals, i.e., signals whose power is less than a minimum are not excluded from weighting.

Meidan et al teaches assigning weighting coefficients to fingers of a diversity receiver, where several levels of confidence are used. See Fig. 3 and col. 16, lines 4-36. The implication is that when the estimated C/I power ratio of a signal received on a diversity finger is below the highest level, a weighting coefficient to be applied to the finger is determined based on which one of a plurality of set levels the C/I is over. A higher C/I ratio would get a greater weighting coefficients, meeting the claim limitation of "weighting by multiplying the output signal by a weighting coefficient the value of which is smaller than 1 and varies in conformity with to [sic] the level of said signal component." It can be deduced that the value of the weighting coefficient is smaller than 1 unless the C/I exceeds the full confidence level.

Thus, it would have been obvious to one skill in the art at the time the invention was made to apply a weighting coefficient to each path proportional to the level of the signal received on the path, less than 1, unless the level is over the full confidence level, as taught by Meidan et al for the purpose of combining the multipath even if they are determined not to have a full confidence level.

Claims 2 and 18 recite the weighting coefficient to be 1 if the signal component is greater than a set level. Meidan et al teaches that if the signal exceed a full confidence level, it is used in the diversity combiner, indicating that weighting coefficient is 1.

Claims 3 and 19.

Meidan et al discloses that higher C/I ratio would get a greater weighting coefficients. Conversely speaking, the smaller the signal level is "the larger N is made" in a weighting coefficient defined by M^{-N}.

Claims 4,7,20,23.

The power of received signal is a well known measure of a channel quality commonly sued as an alternative to the signal to noise ratio C/I, and thus would have been obvious to one skilled in the art at the time the invention was made.

Claims 12,13,28,29.

Likewise, the received signal level, the average or the larger of absolute values of quadrature signals, a well known measure of a channel quality commonly sued as an alternative to the signal to noise ratio C/I, and thus would have been obvious to one skilled in the art at the time the invention was made.

Claims 14,30.

It would have been obvious to lower the confidence level when the transmission rate of a symbol is lower and the spreading gain is greater since the received signal is received with more confidence.

Claims 16,32.

It is well established that a searcher finger assigns weighting coefficients to diversity fingers and thus would have been obvious to one skilled in the art at the time the invention was made to use a searcher finger that assigns weighting coefficients to diversity fingers.

4. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Niida et al (previously cited).

Niida et al discloses a CDMA receiver (see Fig.5), comprising;

means (11,14) for applying despread processing to first and second reception signals that arrive via paths at respective timings, see Spread Code Timing,

a weighting means (12,15) for deciding first and second weighting coefficients for the first and second despreaded reception signals based on the level of the signals (see col.2, lines 3-6) and applying the weighting to the first and second despread reception signals using the first and second weighting coefficients, see multipliers (13,16) and

means (53) for combining the weighted and despreaded reception signals in accordance with power maximal ratio combining, wherein, if the power of the first signal is smaller than that of the second signal, the first weighting coefficient is smaller than the second weighting coefficient. Note that since the weights applied to the signals are in proportion to the respective amplitudes of the signals, which is another way of describing that, if one signal has less power relative to the other, then the weight coefficient to the signal is smaller to the weight coefficient to that other signal.

Niida et al fails to describe a condition "where the power of the first and second signal is less than a set level" when the first and second weighting coefficients are applied to signals received on respective reception paths.

Meidan et al teaches assigning weighting coefficients to fingers of a diversity receiver, where several levels of confidence are used. See Fig. 3 and col. 16, lines 4-36. The implication is that when the estimated C/I power ratio of a signal received on a diversity finger is below the highest level, a weighting coefficient to be applied to the finger is determined based on which one of a plurality of set levels the C/I is over. A higher C/I ratio would get a greater weighting

coefficients, meeting the claim limitation of "weighting by multiplying the output signal by a weighting coefficient the value of which is smaller than 1 and varies in conformity with to [sic] the level of said signal component." It can be deduced that the value of the weighting coefficient is smaller than 1 unless the C/I exceeds the full confidence level.

Thus, it would have been obvious to one skill in the art at the time the invention was made to apply a weighting coefficient to each path proportional to the level of the signal received on the path, unless the level is over the full confidence level, as taught by Meidan et al for the purpose of combining the multipath even if they are determined not to have a full confidence level.

Allowable Subject Matter

5. Claims 8,9,11,15,24,25,27and 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Y. Kim whose telephone number is 571-272-3039. The examiner can normally be reached on 8AM --5PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Venderpuye can be reached on 571-272-3078. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KEVIN KIM
PATENT EXAMINER